

hot to the touch and it is possible that the heat causes them to drop. Numbers of broken shells among the rocks on the ground attested to the dangers attending this form of "sport". If the fall did not prove disastrous the snail began crawling almost immediately after dropping, presumably to repeat the experience.

Other species of shells collected on Saghalien were:—
Succinea lauta karaftoensis Pilsbry. On partly decaying leaves in damp places at Ichinosawa, Kiminai and Kawakami.

Kaliella gudei Pilsbry. Ichinosawa.

Gonyodiscus pauper Gould. On decaying logs and stumps and under bark, at Ichinosawa, Kiminai and Kawakami.

Pristiloma japonica Pilsbry. Ichinosawa.

Columella edentula Drap. On stems of "Akita buki" and other large leaved plants, at Ichinosawa, Kiminai and Kawakami.

Zoogenetes harpa Say. Ichinosawa.

Lymnaea sp. Kiminai River.

Margaritana margaritifera, L. One specimen. Kiminai River.

THE MOLLUSCA OF LAKE BAIKAL

BY T. D. A. COCKERELL

I have just returned from a trip to Lake Baikal, where, as the guest of the Biological Station of the University of Irkutsk, I had the great pleasure of seeing the Baikal snails alive, dredged up from the stony bottom in a few fathoms of water. When I reached the lake, I hastened to the shore, expecting to find the snails at the water's edge, but none could be seen. They do not exist along the shore line, but only some distance out, in the deeper water. At the station they have devised an ingenious apparatus for

bringing up large stones, and on these will be found many mollusca, planarian worms and amphipod crustacea. Mr. Ivan Rubtsoff, who went collecting with me, knows the species so well that he can name them at sight. Those we brought up, close to the station, were *Benedictia baicalensis* Gerstf., *Baicalia flori* Dyb., *Ancylus troschelii* Dyb., *Valvata grubii* Dyb., species of *Achoanomphalus*, &c. It was interesting to see the living *Benedictia*; a *Paludina*-like snail with the head, tentacles and upper parts of body black, the sole grey. In deeper water are other species of *Benedictia* with larger and thinner shells, the largest being *B. fragilis* Dyb., 40 to 52 mm. long. The lake contains about 90 species of mollusca, of which 81 are endemic, while many of the most characteristic species belong to endemic genera. The lake is very clear, the water is saturated with oxygen, and there is very little mineral matter in solution. The shells are consequently thin; those of *Ancylus sibiricus* Gerst. are so fragile that it is difficult to get them intact, and they are often lost from specimens brought up. Baikal is the deepest lake in the world, with a maximum depth of about 1560 meters. The water is extremely cold. Thus the conditions are quite unique and apparently unsuited to the more ordinary forms of mollusca. *Lymnaea auricularia* is represented by two endemic varieties at the warmer southern end of the lake. A peculiar variety of *L. ovata* has been described by Lindholm, and *Physa fontinalis* has been taken. Some of the Baikal types are found in the great river Angara, flowing swiftly out of the lake, but in the surrounding country the fresh water shells are of ordinary European type. Thus Middendorff long ago found *Planorbis contortus*, *P. nitidus*, *Lymnaea stagnalis*, *L. truncatula*, &c., in the vicinity of Irkutsk.

Professor Lvoff, head of the department of geology at the University of Irkutsk, has found a very interesting series of fossils, I suppose probably of Tertiary age, in dense rock at Vitim in the Transbaikal. The principal specimens are shells of paludinoïd form, about

17 mm. long, with deep sutures, which seem to me to differ in no visible character from *Benedictia*. Caddis-cases show that the deposit is of fresh water origin. There are also fragmentary fishes, probably salmonoid. If the reference of these shells to *Benedictia* can be confirmed, an extension of the lake to the eastward is apparently indicated. Professor Nasonov tells me that he thinks the Sea of Japan holds the key to the origin of the Baikal fauna, the ancient connection with the sea having been eastward rather than northward or southwestward. However the evidences of marine origin are much weaker than is generally supposed, and probably inconclusive. The nudibranch, *Ancylodoris baicalensis* Dyb., probably never came from the lake. It cannot now be found by any one. It was described from a specimen left after the death of Grube in a bottle simply labelled Lake Baikal. The supposed pteropod is certainly a mistake.

I hunted in the surrounding region for land snails, with extremely poor success. Probably there is no region which is fertile and with an abundant flora, which possesses so few land snails. I imagine that this may be due to the fact that the Gobi Desert, immediately to the south, has made impossible any migration northward since the ice age. The plants and insects, being more mobile, have come in from the east, and perhaps partly from the west. The only snail of fair size I could find was what I take to be *Eulota fruticum asiatica* Dyb., probably better called a distinct species, *E. asiatica*. I collected them at Baikal Railway Station and at Archan. The other snails are such small and widespread species as *Cochlicopa lubrica*, *Euconulus fulvus*, *Gonyodiscus ruderata* and *Vitrea radiatula*. *Succinea* also occurs. Westerlund described two species of *Hygromia* from Irkutsk, and a third from a locality in the same region. The type locality of *H. sibirica* Wst. is Kultuk, at the southern end of Lake Baikal, and *Vertigo alpestris* Ald. has been taken at this place. I passed through Kultuk on the way to Archan, but had no opportunity to hunt for snails. Of slugs I found only one

species, common everywhere. This is *Agriolimax agrestis*, invariably of the very pale reddish variety without spots.

At Archan, Olga and Nina Lvoff, the daughters of Professor Lvoff, guided me to a travertine deposit they had discovered at the foot of the mountains, close to the shrine of a Buriat priestess. In this I found leaves of *Populus tremula*, and fossil snails of the species *Eulota asiatica*, *Euconulus fulvus*, and *Cochlicopa lubrica*. As the aspen and all these snails are still living in the immediate vicinity, I conclude that the deposit must be of Holocene age.

As I write we are making arrangements to go to Tashkent, in Russian Turkestan.

P. S.—On further consideration, I believe the snail of the Baikal region, referred to as Dybowski's *asiatica*, must be the *Helix schrenckii* Middendorff, of which Dr. L. V. Schrenck said that the depressed form was like *H. fruticum*. This species has been recorded from Baikal. Gude refers it to *Theba*, but this is not very convincing. I have not as yet made any dissections. *H. sibirica* Friv. is said to be the same, and I fancy *asiatica* Dyb. must also be identical.—T. D. A. C.

CONUS AURORA LAMARCK

BY J. R. LeB. TOMLIN AND MINA L. WINSLOW

What is the correct name to employ for the commonest South African cone? There is no lack of choice. The species is variable in coloration and this fact has led as usual to a bewildering array of synonyms.

The earlier writers on South African Mollusca generally called it *rosaceus* Chemnitz, referring to the Systematisches Conchylien-Cabinet XI, plate 181 figs. 1756 and 1757, and this is probably the earliest identifiable record,